

REMARKS

Claim 1 has been amended to define further and more fully certain novel and distinguishing features of the invention. Previously independent claim 24 has been made dependent on amended claim 1, appropriate revisions have been made in this and other dependent claims to conform to the amendments introduced to claim 1, and claim 17 has been cancelled. Since the present Amendment does not increase either the total number of claims or the number of independent claims, no additional fee is necessary.

Claims 1, 2, 5, 16 and 18 - 26 are in the application. All the claims have been finally rejected under 35 U.S.C. §103(a) as unpatentable over WO 02/038374 (Ogawa WO '374, as translated in U.S. Pub. No. 2004/0100125) in view of U.S. patent No. 6,291,068 (Wang), with which are combined U.S. patent No. 6,362,269 (Ishihata) in the rejection of claim 2, U.S patent No. 5,188,896 (Suh) in the rejection of claim 5, and U.S. Pub. No. 2005/0263345 (Erickson) in the rejection of claim 20.

As amended herein, claim 1 recites (with added limitations numbered):

"A (1) fire resistant laminated sheet comprising a fire resistant fiber sheet and a porous material, said fire resistant fiber sheet consisting of a fiber sheet in which fire retardant capsules, consisting of a water soluble fire retardant powder covered with a water insoluble synthetic resin shell, are added, and said fiber sheet is bound with a sulfomethylated and/or sulfimethylated phenolic resin which is added to said fiber sheet in an amount of between 5 and 200% by mass relative to the mass of said fiber sheet without said capsules, wherein said fire retardant (2) fiber sheet and said porous material are bonded together by a hot melt adhesive powder scattered on a surface of said fire resistant fiber sheet or said porous material in an amount in the range between 1 to 100 g/m² (3) to secure a ventilation resistance of said fire resistant laminated sheet in the range between 0.1 and 100 kPa·s/m to give said fire resistant laminated sheet an excellent acoustic property."

The three limitations added to claim 1 by this Amendment are respectively designated

(1), (2) and (3) above. Of these, limitation (1) was heretofore set forth in claim 18, dependent on claim 1 (and originally dependent on any of claims 1 - 5); limitation (2) was heretofore set forth in claim 20, indirectly dependent on the aforesaid claim 18; and limitation (3) was heretofore set forth in claim 17, indirectly dependent on claim 1 (and originally indirectly dependent on any of claims 1 - 6), and in claim 22, indirectly dependent on the aforesaid claim 18. Thus, each of the added limitations in amended claim 1 has been previously claimed in the present application, and indeed each was specifically addressed in the final Office Action (see lines 1-3 at p. 6 of the final Office Action for limitation (1), numbered section 5 at p. 11 of the Office Action for limitation (2), and lines 5-6 at p. 5 of the Office Action for limitation (3)). It follows that the amendments herein made to claim 1 do not raise any new issues after final rejection, but may properly be entered and considered by the Examiner at this time.

Moreover, these amendments are all clearly supported by written disclosure in the original specification. In addition to the above-cited original claims, see in particular the description at pp. 23-25 of the specification and EXAMPLES 9, 10 and 13.

With reference to the rejection of the claims on the cited art, it may be noted that the final Office Action acknowledges (e.g., at p. 5, lines 5-7) that the references do not disclose the claimed ventilation resistance (i.e., ventilation resistance in the range between 0.1 and 100 kPa·s/m) now recited in amended claim 1. The final Office Action asserts that

"the claimed property is deemed to be inherent to the structure in the prior art combination since the prior art combination teaches an invention with a substantially similar structure and chemical composition (a molded fire resistant fiber sheet comprising the claimed fire retardant capsule and sulfimethylated and/or sulfomethylated phenolic resin) as the claimed invention. Products of identical structure and composition cannot have mutually exclusive properties. . . . Additionally, it should be noted that the claimed ventilation resistance is a result effective variable" (final Office Action, p. 5, lines 7-14).

Nevertheless, applicants respectfully submit that the claimed ventilation resistance of their laminated sheet as defined in present claim 1 is not inherent in the fiber sheet such as

disclosed in Ogawa WO '374, because the ventilation resistance is much subject to the synthetic resin content of the fiber sheet and ventilation of adhesive bonding between the fiber sheet and the porous sheet. In applicants' claim 1 as herein amended, the resin content of the fiber sheet is limited in an amount between 5 and 200% by mass and the scattering amount of the hot melt adhesive powder on the surface of the fiber sheet or the porous sheet is limited in an amount in the range between 1 to 100 g/m² to secure a ventilation resistance of the laminated sheet in the range between 0.1 and 100 kPa·s/m to give the laminated sheet an excellent acoustic property.

In particular, regarding the limitation of adding amount of the phenolic resin, it is described on page 20 of the original specification that "In a case where the amount of said synthetic resin impregnated thereinto is below 5% by mass, the rigidity and moldability of said porous sheet are not improved, while in a case where the amount of said synthetic resin impregnated thereinto is beyond 200% by mass, the air permeability of said porous sheet is inhibited, diminishing its acoustic property."

The reason why the hot melt adhesive powder is used to bond between the fiber sheet and the porous material is to secure the ventilation of the lamination sheet (page 24 of the original specification) and further, it is described that "said hot melt adhesive powders are scattered on one porous sheet, while the other sheet is laminated by pressing it onto said porous sheet after said hot melt adhesive powder is softened by heating, and to secure its ventilation, the amount of said hot melt adhesive powder to be scattered is set to be below 100 g/m². Nevertheless, in a case where the amount of said hot melt adhesive powder to be scattered is below 1 g/m², the interlaminar bonding strength of said laminated porous sheet may be little. A molded article of said laminated porous sheet preferably has a ventilation resistance between 0.1 and 100 kPa·s/m. Said molded article whose ventilation resistance is between 0.1 and 100 kPa·s/m has an excellent acoustic property."

The present invention relates to flame retardant acoustical absorbents for automobiles so acoustic property of the laminated sheet of the present invention is one of the most important properties together with fire retardancy.

The point is that the laminated sheet of amended claim 1, and the articles of the prior art, are not "products of identical structure and composition." Having in mind that the claimed

product is a laminated sheet, and that the claimed property is the ventilation resistance of the laminated sheet, which is dependent on such factors as resin amount in a fire resistant fiber sheet and hot melt adhesive amount in a laminate, applicants submit that it would be mere happenstance whether a sheet produced in accordance with the disclosure of Ogawa WO '374 would or would not have such a property. There is nothing in the teaching of Ogawa WO '374 to indicate that ventilation resistance (a property which is itself not even mentioned) is dependent on these factors, much less to suggest how to select them in order to achieve that undisclosed result. Wang and Ishihata, cited only for features related to the fire retardant capsules incorporated in the fire resistant sheet, and Suh, cited only for hollow fibers, add nothing to Ogawa WO '374 in this regard.

Erickson is combined with Ogawa WO '374 and Wang in the rejection of claim 20 as bearing on the presence and amount of hot melt adhesive powder; but Erickson does not suggest how to select such amount to achieve applicants' claimed ventilation resistance in bonding a porous material to a fire resistant fiber sheet of applicants' defined type.

Moreover, Ogawa WO '374 does not disclose that the laminated sheet having a ventilation resistance in the range between 0.1 and 100 kPa·s/m has an excellent acoustic property suitable for such as a car interior, nor do the secondary references supply what is lacking in Ogawa WO '374 in this respect. While the final Office Action characterizes ventilation resistance as a result-effective variable, it does not cite any reference as teaching or suggesting that the ventilation resistance property is indeed a result-effective variable. It is well settled that, before a claim limitation can be denied patentable weight on the ground that it represents mere routine optimization of a result-effective variable, the result effectiveness of the variable must be shown to have been recognized in the art. Such is not the case here.

Applicants therefore further submit that the recitals of laminated sheet, ventilation resistance range, amount of resin in the fiber sheet and amount of hot melt adhesive powder in amended claim 1, in combination, distinguish claim 1 patentably over Ogawa WO '374, Wang, Ishihata, Suh and Erickson, and any proper combination thereof. The other claims in the application, all being directly or indirectly dependent on claim 1, are submitted to be allowable therewith.

For the foregoing reasons, it is believed that this Amendment will place the application in condition for immediate allowance. Entry of the Amendment, and favorable action, are accordingly courteously requested.

Respectfully,

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I hereby certify that this paper is being deposited this date with the U.S. Postal Service as first class mail addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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